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Re-evaluation Decision RVD2018-27

# Deltamethrin and its Associated End-use Products

*Final Decision*

*(publié aussi en français)*

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## Re-evaluation Decision

Under the authority of the *Pest Control Products Act*, all registered pesticides must be regularly re-evaluated by Health Canada's Pest Management Regulatory Agency to ensure that they continue to meet current health and environmental safety standards and continue to have value. The re-evaluation considers data and information from pesticide manufacturers, published scientific reports and other regulatory agencies. Health Canada applies internationally accepted risk assessment methods as well as current risk management approaches and policies.

Deltamethrin is a synthetic pyrethroid insecticide registered to control a broad range of arthropod pests on a wide variety of sites, including greenhouse ornamentals and tobacco, field food and feed crops, roadsides, shelterbelts and turf. Farmers, farm workers and professional applicators apply it by using conventional aerial and ground equipment. Since the proposed re-evaluation decision for deltamethrin was published in December 2015, a major new use of deltamethrin for mosquito control was registered. Refer to Registration Decision RD2017-08, *Deltamethrin* for details on the assessment. Currently registered products containing deltamethrin are listed in Appendix I.

This document presents the final regulatory decision[1] for the re-evaluation of deltamethrin, including the required risk mitigation measures to protect human health and the environment. All products containing deltamethrin registered in Canada are subject to this re-evaluation decision. This re-evaluation decision has undergone a 60-day consultation period on the Proposed Re-evaluation Decision PRVD2015-07, Deltamethrin,[2] which ended on 28 February 2015.

Health Canada received comments relating to the environmental risk assessment. These comments are summarized in Appendix II along with the responses by Health Canada. The comments did not result in a change to risk assessment. Therefore, this decision is consistent with the proposed re-evaluation decision stated in PRVD2015-07, which lists all data used as the basis for the re-evaluation decision.

## Outcome of Science Evaluation

Deltamethrin is a broad-spectrum insecticide that controls numerous insect pests in many crops. It contributes to resistance management by helping to delay the development of resistance when used in rotation with other insecticides with different modes of action.

An evaluation of available scientific information found that the health and environmental risk associated with the use of deltamethrin and associated end-use products are acceptable when used according to the conditions of registration, including revised label directions.

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1 "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

2 "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act*.

## Regulatory Decision for Deltamethrin

Health Canada has completed the re-evaluation of deltamethrin. Under the authority of the *Pest Control Products Act*, Health Canada has determined that continued registration of products containing deltamethrin is acceptable. An evaluation of available scientific information found that use of deltamethrin products meet current standards for protection of human health and the environment when used according to the conditions of registration, which include required amendments to label directions. Label amendments, as summarized below and listed in Appendix III, are required for all technical and end-use products. No additional data are requested.

## Risk Mitigation Measures

Registered pesticide product labels include specific directions for use. Directions include risk mitigation measures to protect human health and the environment and must be followed by law. The key risk-reduction measures required, as a result of the re-evaluation of deltamethrin, are summarized below. Refer to Appendix III for details

**Human Health**
To protect mixer/loader/applicators, the following risk-reduction measures are required on agricultural labels:

- Workers must wear a respirator with either a NIOSH approved organic vapour-removing cartridge with a prefilter approved for pesticides or a NIOSH approved canister approved for pesticides when mixing, loading, and applying deltamethrin using mechanically pressurized handgun equipment.

To protect workers entering treated sites, the following risk-reduction measures are required on agricultural labels:

- **DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

To protect bystanders, the following risk-reduction measures are required on commercial labels:

- Apply only to agricultural crops when the potential for drift to areas of human habitation and human activity (such as houses, cottages, schools and recreational areas) is minimal. Take into consideration wind speed, wind direction, temperature inversion, application equipment and sprayer settings.

As there are no registered products that use fogging or misting applications (automated and/or manual) in greenhouses, the following statement is required to be added to all agricultural labels:

- **DO NOT** apply using handheld or automated fogging, mist blower, or airblast equipment.

**Environment**
To protect the environment, the following risk reduction measures are required on commercial class products:

- Environmental precaution statements for bees, beneficial insects, mammals and aquatic organisms. Directions to restrict the application of deltamethrin to periods when pollinators are not actively foraging are required.
- Spray buffer zones for non-target aquatic and terrestrial habitats are required.
- To reduce the potential for runoff of deltamethrin to adjacent aquatic habitats, precautionary statements for sites with characteristics that may be conducive to runoff and when heavy rain is forecasted are required.

## Next Steps

To comply with this decision, the required mitigation measures must be implemented on all product labels sold by registrants no later than 24 months after the publication date of this decision document. Appendix I lists the products containing deltamethrin that are registered under the authority of the *Pest Control Products Act*.

## Other Information

Any person may file a notice of objection[3] regarding this decision on deltamethrin within 60 days from the date of publication of this Re-evaluation Decision. For more information regarding the basis for objecting (which must be based on scientific grounds), please refer to the Pesticides section of Canada.ca (Request a Reconsideration of Decision) or contact the PMRA's Pest Management Information Service.

[3] As per subsection 35(1) of the *Pest Control Products Act*.

# Appendix I Registered Deltamethrin Products in Canada[1]

| Registration Number | Registrant | Marketing Class | Product Name | Formulation Type | Guarantee |
|---|---|---|---|---|---|
| 18092 | Bayer CropScience Inc. | Technical | Deltamethrin Technical Insecticide | Solid | 99.5% deltamethrin |
| 17734 | | Commercial | Decis 5 EC Insecticide (Prairies and Peace Interior of British Columbia) | Emulsifiable Concentrate | 50 g/L deltamethrin |
| 20078 | | | Decis Flowable Insecticide (Prairies and Peace River Region of British Columbia) | Suspension | 50 g/L deltamethrin |
| 22478 | | | Decis 5 EC Insecticide (Eastern Canada and British Columbia) | Emulsifiable Concentrate or Emulsion | 50 g/L deltamethrin |
| 25573 | | | Decis Flowable Insecticide (Eastern Canada And British Columbia) | Suspension | 50 g/L deltamethrin |
| 28791 | | | DeltaGard SC Insecticide | Suspension | 50 g/L deltamethrin |
| 29611 | | | Concept Liquid Insecticide | Suspension | 75 g/L imidacloprid; 10 g/L deltamethrin |
| 32656 | | | DeltaGard 20EW | Suspension | 20 g/L deltamethrin |
| 29862 | | Restricted | DeltaDust Insecticide | Dust | 0.05% deltamethrin |
| 32445 | Sharda Cropchem Limited | Technical | Poleci Technical | Solid | 98.2% deltamethrin |
| 32446 | Sharda Cropchem Limited | Commercial | Poleci 2.5 EC Eastern Insecticide | Emulsifiable Concentrate or Emulsion | 25 g/L deltamethrin |
| 32447 | Sharda Cropchem Limited | | Poleci 2.5 EC Western Insecticide | Emulsifiable Concentrate or Emulsion | 25 g/L deltamethrin |

[1]As of 16 July 2018, excluding discontinued products or products with a submission for discontinuation.

## Appendix II Comments and Responses

In response to the consultation for the deltamethrin proposed re-evaluation decision, the following comments were received:

**Comments Related to the Environmental Risk Assessment**

In response to the consultation document PRVD2015-07, *Deltamethrin*, comments related to the environmental assessment were received from the registrant.

**Comment - Deltamethrin marine invertebrates species sensitivity distributions (SSD)**

> *PMRA proposed a refined risk assessment for marine/estuarine aquatic invertebrates based on an SSD analysis. This analysis was based on data available for 7 species, with an $HC_5$ calculated to be $1.21 \times 10^{-4}$ µg a.i./L. Numerous attempts to replicate this endpoint were conducted; however, it is not clear what data was used (endpoint selection, technical vs. formulation data, etc.), and therefore, replication of the $HC_5$ was not possible.*
>
> *Posthuma et al. (2002) suggests that SSDs should be tailored by selecting data for those species that occur in the ecosystem under consideration. However, due to the limited amount of data, this is not always possible; in addition, Malty et al. (2005) suggest that species selection is more important in the construction of an SSD, rather than the habitat and geographical distribution of the species.*
>
> *Given the wealth of data available for aquatic invertebrates exposed to pyrethroids (see Giddings and Wirtz, 2012; 2014; 2015), an $HC_5$ calculated from an SSD based on 7 species that includes both formulated and technical data, should not be considered a robust distribution of the relative sensitivities in estuarine environments.*
>
> *Therefore, it is the recommendation of Bayer CropScience that the endpoint used in the marine risk assessment be based on the most sensitive species reported in the PMRA evaluation (i.e., Homarus americanus, 96-hour $EC_{50}$ = 0.0014 µg a.i./L). This endpoint should be considered sufficiently protective of marine aquatic invertebrates.*

**Health Canada Response**

Species sensitivity distributions (SSDs) are a widely accepted tool for use in ecological risk assessments. Health Canada determined SSDs for deltamethrin using the model ETX 2.1 and based on acceptable toxicity data that were available at the time of the review. Effects assessments on marine species were determined separately from freshwater species. The SSDs were calculated using the data reported in Table 7 of PRVD2015-07. For deltamethrin, acute toxicity studies on seven marine/estuarine invertebrate species were available for use in the SSD calculation. Where the data set included multiple values for some species, a geometric mean was calculated to normalize the ranges being averaged. Both technical grade and formulated product toxicity data were used in the SSD analysis. The formulated product test endpoints were converted to active ingredient equivalents and, therefore, the units are consistent in the derivation of the final $HC_5$ value. Specifically with respect to the lobster species (*Homarus americanus*),

Health Canada derived a geometric mean of 0.00326 µg a.i./L based on the available data, which is more than double the single species toxicity endpoint of 0.0014 µg a.i./L identified by Bayer CropScience. Health Canada considers the $HC_5$ derived from an SSD assessment to be more protective than the use of the most sensitive species.

**Species used to generate the SSD for acute toxicity of deltamethrin to marine invertebrates.**

| Species | Toxicity value (µg a.i./L) |
|---|---|
| Eastern Oyster *(Crassostrea virginica)* | 33.9* |
| Fiddler crab *(Uca pugilator)* | 1.1 |
| Pink shrimp *(Penaeus duorarum)* | 0.35 |
| Sand shrimp *(Crangon septemspinosa)* | 0.0238 |
| Mysid shrimp *(Mysidopsis bahia)* | 0.0033* |
| Northern lobster/American lobster *(Homarus americanus)* | 0.00326* |
| Marine amphipod *(Eohaustorius estuarius)* | 0.0017 |
| **$HC_5$** | **0.000121** |

* Toxicity value representing a geometric mean.

**Comment**

*The product can be applied using medium-sized droplets instead of fine-sized droplets, which will reduce the required buffer zone.*

**Health Canada response**

Health Canada has recalculated spray buffer zones based on ASAE medium spray quality. Spray buffer zones have been refined by setting restrictions on various spray application parameters (spray droplet size, wind speed, humidity, temperature, low drift spray nozzle technology, reduced number of applications). Restrictions for aerial applications include spray droplet size (medium/coarse), wind speeds at the time of application (<10 km/h), temperature at the time of application (<20°C) and relative humidity at the time of application (<50%). For all ground field sprayer use restrictions include the use of low drift air induction nozzles only, and wind speeds at the time of application (<8 km/h). These restrictions are consistent with those implemented for cypermethrin (RVD2018-22) and proposed for permethrin (PRVD2017-18).

With these restrictions, the spray buffer zones required for aerial application of deltamethrin for the protection of marine habitats are large (i.e., up to 800 metres) and, in some cases, may not fully mitigate the risk to marine organisms. The spray buffer zones for the protection of marine habitats are calculated based on acute effects to marine invertebrates, which are known to be highly sensitive to pyrethroids relative to other aquatic organisms. Despite their high sensitivity, with spray buffer zones in place, the potential for acute risk to marine invertebrates is expected to be low because:

1) The aerial buffer zones (limited to 800 metres) are expected to mitigate >99% of the acute risk for aquatic invertebrates.

2) Marine/estuarine environments are subject to daily tidal flushing events. As a result, marine invertebrate populations that are potentially at risk from receiving aerial spray drift would be expected to recover quickly via recolonization.

3) Both laboratory and field evidence show that a significant amount of deltamethrin that is received as spray drift onto surface water is re-volatilized back into the air, thus further reducing the exposure potential of aquatic organisms to deltamethrin. Deltamethrin residues remaining in surface water are shown to be very short-lived (i.e., average surface water half-life of 24 hours).

Based on the above reasoning, with the restrictions in place, the risk to aquatic organisms from spray drift is acceptable. Spray buffer zones are applicable between the point of direct application and the closest downwind edge of sensitive habitats. Should the required spray buffer zones be undesirable to growers or unfeasible, the option remains to wait for a change in wind direction away from sensitive areas.

## Appendix III Label Amendments for Products Containing Deltamethrin

The label amendments presented below do not include all label requirements for individual end-use products, such as first-aid statements, disposal statements, precautionary statements and supplementary protective equipment. Information on labels of currently registered products should not be removed unless it contradicts the following label statements.

**I) The following changes must be made to the labels of technical grade deltamethrin:**

a. The following statement must be included in the section entitled **TOXICOLOGICAL INFORMATION**:

Skin exposure may cause transient sensations (tingling, burning, itching, numbness). Treat symptomatically.

b. The following statement must be included in the section entitled **PRECAUTIONS**:

**DO NOT** discharge effluent containing this product into sewer systems, lakes, streams, ponds, estuaries, oceans or other waters.

c. The following statement must be included in a section entitled **ENVIRONMENTAL PRECAUTIONS:**

TOXIC to aquatic organisms.

**II) The following changes must be made to all labels of commercial and restricted class products containing deltamethrin:**

a. The following statement must be included in the section entitled **TOXICOLOGICAL INFORMATION**:

Skin exposure may cause transient sensations (tingling, burning, itching, numbness). Treat symptomatically.

b. The following statement must be included in the section entitled **PRECAUTIONS**:

Apply only to agricultural crops when the potential for drift to areas of human habitation and human activity such as houses, cottages, schools, and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.

c. The following statements must be included in a section entitled **DIRECTIONS FOR USE**:

**DO NOT** apply using handheld or automated fogging, mist blower, or airblast equipment.

**DO NOT** enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

As this product is not registered for the control of pests in aquatic systems, **DO NOT** use to control aquatic pests.

**DO NOT** contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

To protect pollinators, follow the instructions regarding bees in the Environmental Precautions section.

Field sprayer application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply when wind speed is greater than 8 km/h at the site of application. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE S572.1) medium classification. Air-induction nozzles must be used for the ground application of this product. Boom height must be 60 cm or less above the crop or ground.

Airblast application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** direct spray above plants to be treated. Turn off outward pointing nozzles at row ends and outer rows. **DO NOT** apply when wind speed is greater than 16 km/h at the application site as measured outside of the treatment area on the upwind side.

Aerial application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply when wind speed is greater than 8 km/h at flying height at the site of application. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE S572.1) medium-coarse classification. **DO NOT** apply under weather conditions of less than 50% relative humidity and temperatures greater than 20°C. Nozzle distribution along the spray boom length MUST NOT exceed 65% of the wing- or rotorspan.

**Buffer zones:**

Spot treatments using hand-held equipment DO NOT require a buffer zone.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands) and estuarine/marine habitats.

## Ground Buffer Zone

| Method of application | Crop | | Buffer Zones (metres) Required for the Protection of*: | | | | |
|---|---|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Estuarine/Marine Habitats of Depths: | | Terrestrial habitat |
| | | | Less than 1 m | Greater than 1 m | Less than 1 m | Greater than 1 m | |
| Field sprayer | Shelterbelts | | 4 | 2 | 120 | 120 | 1 |
| | Turf (golf courses, residential lawns, sod farms) | | 3 | 2 | 120 | 65 | 1 |
| | Tobacco (pre-plant) | | 1 | 1 | 55 | 25 | 1 |
| | Tobacco (post plant) | | 1 | 1 | 30 | 15 | 0 |
| | Tobacco (cover crop) | | 1 | 1 | 15 | 10 | 0 |
| | Pepper, field corn, seed corn, sweet corn | | 1 | 1 | 45 | 20 | 1 |
| | Chokecherry shelterbelt | | 1 | 1 | 40 | 20 | 1 |
| | Alfalfa (seed production only), potato (High organic muck soils), Potato (non-organic soil), red clover established ( for seed production only) | | 1 | 1 | 35 | 15 | 1 |
| | Broccoli, Brussels sprout, cabbage, cauliflower, kale | | 2 | 1 | 30 | 15 | 1 |
| | Asparagus, strawberry | | 1 | 1 | 30 | 15 | 1 |
| | Canola, mustard, rapeseed, onion, sugar beet, high organic muck soils: broccoli, Brussels sprout, cabbage, cauliflower, sweet corn | | 1 | 1 | 30 | 15 | 0 |
| | Canola (triazine tolerant), oilseed mustard, tomato, barley, flax, lentil, oat, wheat, rangeland, pasture, lowbush blueberry, high organic muck soils tomato. | | 1 | 1 | 25 | 10 | 0 |
| | Crop subgroup 5A: Head and stem Brassica: cavolo broccolo, Chinese broccoli, Chinese mustard cabbage (gai choy), kohlrabi, Napa Chinese cabbage, soybean | | 1 | 1 | 20 | 10 | 1 |
| | Sunflower, rye or wheat cover crop | | 1 | 1 | 15 | 10 | 0 |
| Airblast | Shelterbelts | Early growth stage | 55 | 45 | 105 | 95 | 10 |
| | | Late growth stage | 45 | 35 | 95 | 85 | 5 |

| Method of application | Crop | | Buffer Zones (metres) Required for the Protection of*: | | | | |
|---|---|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Estuarine/Marine Habitats of Depths: | | Terrestrial habitat |
| | | | Less than 1 m | Greater than 1 m | Less than 1 m | Greater than 1 m | |
| | Pear, apple | Early growth stage | 45 | 35 | 85 | 75 | 3 |
| | | Late growth stage | 35 | 25 | 75 | 65 | 2 |
| | Chokecherry shelterbelts | Early growth stage | 35 | 25 | 85 | 75 | 1 |
| | | Late growth stage | 25 | 15 | 75 | 65 | 1 |
| | Saskatoon berry , highbush blueberry | Early growth stage | 40 | 30 | 80 | 70 | 2 |
| | | Late growth stage | 30 | 20 | 70 | 60 | 1 |
| | Peach | Early growth stage | 30 | 20 | 80 | 70 | 0 |
| | | Late growth stage | 20 | 10 | 70 | 60 | 0 |

*Buffer zones for non-cropland systems, including residential, industrial, urban/municipal and recreational areas (such as parks, campsites, athletic fields, golf courses, playgrounds, roadsides, dumps, junkyards and tire dumps) for the control of adult mosquitoes using an ultra-low volume ground sprayer ARE NOT REQUIRED. Buffer zones for estuarine and marine habitats do not apply for the following PCP#: 17734, 20078 and 29611 because they are used in central Canada only.

For tank mixes, consult the labels of the tank-mix partners and observe the largest (most restrictive).

## Aerial Buffer Zones for Reg. No. 17734* – ASAE Medium-coarse

| Method of application | Crop (number of application × rate of application) | | Buffer Zones (metres) Required for the Protection of: | | |
|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Terrestrial Habitat |
| | | | Less than 1 m | Greater than 1 m | |
| Aerial | Potato, wheat, barley, oat, flax, lentil, pasture, rangeland (2 × 7.5 g a.i./ha) | Fixed wing | 40 | 10 | 1 |
| | | Rotary wing | 25 | 10 | 5 |
| | Canola, mustard, rapeseed, oilseed mustard, wheat, barley, oat, flax, lentil, sugarbeet (1 × 10 g a.i./ha) | Fixed wing | 20 | 10 | 0 |
| | | Rotary wing | 15 | 10 | 0 |
| | Canola, mustard, rapeseed, oilseed mustard, flax, shelterbelt, Potato (high organic muck soils) (1 × 7.5 g a.i./ha | Fixed wing | 15 | 10 | 1 |
| | | Rotary wing | 10 | 5 | 1 |
| | Sunflower (1 × 5 g a.i./ha) | Fixed wing | 10 | 5 | 0 |
| | | Rotary wing | 10 | 5 | 0 |

*To be used in Canadian Prairies and Peace River area of British Columbia not in contact with estuarine/marine habitats.

## Aerial Buffer Zones for Reg. No. 22478 – ASAE Medium-coarse

| Method of application | Crop (number of application × rate of application) | | Buffer Zones (metres) Required for the Protection of: | | | | |
|---|---|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Saltwater Habitats of Depths: | | Terrestrial Habitat |
| | | | Less than 1 m | Greater than 1 m | Less than 1 m | Greater than 1 m | |
| Aerial | Sweet corn (1 × 15 g a.i./ha) | Fixed wing | 45 | 15 | 800 | 800 | 1 |
| | | Rotary wing | 30 | 10 | 800 | 800 | 10 |
| | Potato (2 × 7.5 g a.i./ha), Wheat, barley, oat, flax, lentil, pasture, rangeland (2 × 7.5 g a.i./ha) | Fixed wing | 40 | 10 | 800 | 800 | 1 |
| | | Rotary wing | 25 | 10 | 800 | 750 | 5 |
| | Barley, flax, oat, wheat, sweet corn (high organic muck soils) (1 × 10 g a.i./ha) | Fixed wing | 20 | 10 | 800 | 800 | 1 |
| | | Rotary wing | 15 | 10 | 800 | 800 | 1 |
| | Canola (rapeseed), mustard (1 × 7.5 g a.i/ha), potato (high organic muck soils) (1 × 7.5 g a.i./ha) | Fixed wing | 15 | 10 | 800 | 800 | 1 |
| | | Rotary wing | 10 | 5 | 800 | 750 | 1 |
| | Sunflower (1 × 5 g a.i./ha) | Fixed wing | 10 | 5 | 800 | 800 | 0 |
| | | Rotary wing | 10 | 5 | 800 | 575 | 0 |

## Aerial Buffer Zones for Reg. No. 25573 – ASAE Medium-coarse

| Method of application | Crop (number of application × rate of application) | | Buffer Zones (metres) Required for the Protection of: | | | | |
|---|---|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Estuarine/Marine Habitats of Depths: | | Terrestrial Habitat |
| | | | Less than 1 m | Greater than 1 m | Less than 1 m | Greater than 1 m | |
| Aerial | Sweet corn (1 × 15 g a.i./ha) | Fixed wing | 40 | 15 | 800 | 800 | 1 |
| | | Rotary wing | 35 | 10 | 800 | 800 | 10 |
| | Potato, wheat, barley, oat, flax, lentil, pasture, rangeland (2 × 7.5 g a.i./ha) | Fixed wing | 40 | 15 | 800 | 800 | 1 |
| | | Rotary wing | 30 | 10 | 800 | 775 | 10 |
| | Barley, flax, oat, wheat, sweet corn (high organic muck soils) (1 × 10 g a.i./ha) | Fixed wing | 25 | 20 | 800 | 800 | 1 |
| | | Rotary wing | 20 | 10 | 800 | 800 | 1 |
| | Canola (rapeseed), mustard (1 × 7.5 g a.i/ha), potato (high organic muck soils) (1 × 7.5 g a.i./ha | Fixed wing | 15 | 10 | 800 | 800 | 1 |
| | | Rotary wing | 15 | 5 | 800 | 775 | 1 |
| | Sunflower (1 × 5 g a.i./ha) | Fixed wing | 10 | 5 | 800 | 800 | 0 |
| | | Rotary wing | 10 | 5 | 800 | 700 | 0 |

## Aerial Buffer Zones for Reg. No. 20078* – ASAE Medium-coarse

| Method of application | Crop (number of application × rate of application) | | Buffer Zones (metres) Required for the Protection of: | | |
|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Terrestrial Habitat |
| | | | Less than 1 m | Greater than 1 m | |
| Aerial | Wheat, barley, oat, flax, lentil, pasture, rangeland (2 × 6 g a.i./ha) | Fixed wing | 25 | 10 | 0 |
| | | Rotary wing | 20 | 10 | 0 |
| | Canola, canola (triazine tolerant) mustard, rapeseed (1 × 7.5 g a.i./ha) | Fixed wing | 15 | 10 | 1 |
| | | Rotary wing | 10 | 5 | 1 |

*To be used in Canadian Prairies and Peace River area of British Columbia not in contact with estuarine/marine habitats.

**Aerial Buffer Zones for Reg. No. 29611* – ASAE Medium-coarse**

| Method of application | Crop (number of application x rate of application) | | Buffer Zones (metres) Required for the Protection of: | | |
|---|---|---|---|---|---|
| | | | Freshwater Habitat of Depths: | | Terrestrial Habitat |
| | | | Less than 1 m | Greater than 1 m | |
| Aerial | Soybean, potatoes (3 × 6.5 g a.i./ha) | Fixed wing | 65 | 20 | 10 |
| | | Rotary wing | 45 | 15 | 10 |

*To be used in Canadian Prairies and Peace River area of British Columbia not in contact with estuarine/marine habitats.

For tank mixes, consult the labels of the tank-mix partners and observe the largest (most restrictive) buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASAE) category indicated on the labels for those tank mix partners.

The buffer zones for airblast application of this product can be modified based on weather conditions and spray equipment configuration by accessing the Buffer Zone Calculator on the PMRA website. Buffer zones for field sprayer or aerial application CANNOT be modified using the Buffer Zone Calculator.

**III) In order for use directions of deltamethrin products to be consistent with the assumptions used in the PMRA health risk assessment, labels must be updated to include this information under DIRECTIONS FOR USE, as applicable.**

a. For labels containing use directions for broccoli, Brussels sprouts, cabbage and cauliflower, under the use directions for broccoli, Brussels sprouts, cabbage and cauliflower, replace "Repeat every 10 days as necessary" with the following statement:

"Minimum interval between applications: 10 days; DO NOT APPLY MORE THAN 8 TIMES PER YEAR".

b. For labels containing use directions for kale, under the use directions for kale, replace "Repeat every 10 days as necessary" with the following statement:

"Minimum interval between applications: 10 days; DO NOT APPLY MORE THAN 8 TIMES PER YEAR".

c. For labels containing use directions for asparagus, under the use directions for asparagus, replace "Repeat as needed" with the following statement:

"Minimum interval between applications: 7 days; DO NOT APPLY MORE THAN 3 TIMES PER YEAR".

d. For labels containing use directions for blueberries, under the use directions for blueberries, add the following statement:

"DO NOT APPLY MORE THAN 3 TIMES PER YEAR" immediately before the sentence: "Apply to lowbush blueberries in 100-200 litres of water per hectare."

e. For labels containing use directions for tobacco, under the use directions for tobacco, add the following statements:

"DO NOT APPLY MORE THAN 3 TIMES PER YEAR IN GREENHOUSE" under the "GREENHOUSE" immediately after the sentence: "Plants should be sprayed in the evening".

"DO NOT APPLY MORE THAN ONCE PER YEAR IN FIELD." immediately after the statement: "DO NOT apply within 45 days of harvest (PCP # 22478) and DO NOT apply within 70 days of harvest."

**IV) For all agricultural products, the following statement must be included in the section entitled PRECAUTIONS:**

Workers must wear a respirator with either a NIOSH approved organic vapour-removing cartridge with a prefilter approved for pesticides or a NIOSH approved canister approved for pesticides when mixing, loading and applying deltamethrin using mechanically pressurized handgun equipment.

**V) On commercial class products, the ENVIRONMENTAL HAZARD section must be renamed ENVIRONMENTAL PRECAUTIONS.**

**VI) The following statements must be included in the ENVIRONMENTAL PRECAUTIONS section for commercial class products:**

TOXIC to aquatic organisms. Observe buffer zones specified under DIRECTIONS FOR USE.

Toxic to small wild mammals.

TOXIC to bees. Minimize spray drift to reduce harmful effects on bees in habitats close to the application site. Avoid applications when bees are foraging in the treatment area in ground cover containing blooming weeds. To further minimize exposure to pollinators, refer to the complete guidance "Protecting Pollinators during Pesticide Spraying – Best Management Practices" on Canada.ca. Follow crop specific directions for application timing.

Toxic to certain beneficial insects. Minimize spray drift to reduce harmful effects on beneficial insects in habitats next to the application site such as hedgerows and woodland. Deltamethrin may impact predatory and parasitic arthropod species used in IPM programs within the treatment area. Unsprayed refugia for beneficial species of at least 1 metre from treatment area will help maintain beneficial arthropod populations.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application of this product when heavy rain is forecast.

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

**VII) The following statements must be included in a section entitled ENVIRONMENTAL PRECAUTIONS on labels of end use products with greenhouse uses:**

Toxic to bees and other beneficial insects. May harm bees and other beneficial insects used in greenhouse production. Avoid application when bees or other beneficial insects are actively foraging in the treatment area.

DO NOT allow effluent or runoff from greenhouses containing this product to enter lakes, streams, ponds or other waste.